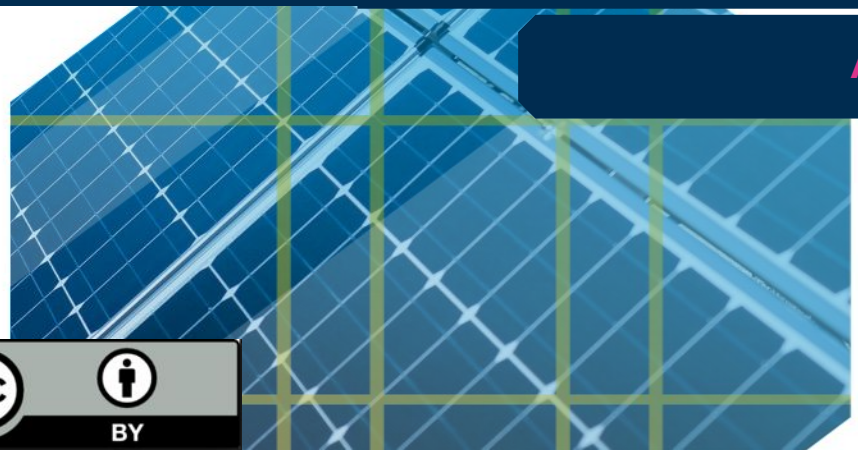
H2020-Grant Agreement 787289

GRECO

GRECO: *The power of Citizen Science for making engineering innovations*



Ana Belén Cristóbal @anabcristobal

Open Science Internacional Staff Week
7 November 2019
Universidad Carlos III de Madrid

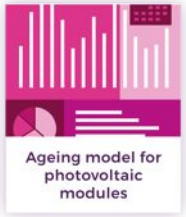
INSTITUTO DE ENERGÍA SOLAR

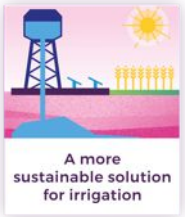
POLITÉCNICA

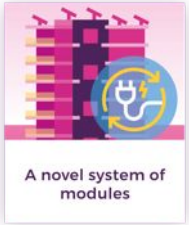
GRECO in a nutshell

GRECO

RESEARCH + KNOWLEDGE COALITONS + RRI+ + OPEN SCIENCE =







RESPONSIBLE SOCIALLY ACCEPTABLE INNOVATIVE SOLUTIONS

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Case 1: Citizen Science Inputs to create added- value products

GRECO

State-of-the-art

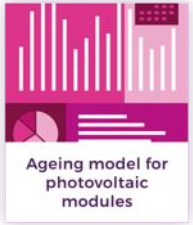
- ✔ PV systems energy production is warranted by manufactures for 25-30 years
- ✔ PV systems are not perfect. Ageing occurs. Current models assume linear degradation along the whole lifespan
- ✔ Due diligence is based on such models.
- ✔ Are we underestimating real energy production along the years? Is RoI unprecise?. Is this affecting to the increment of PV capacity in the energy mix?

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Case 1: Citizen Science Inputs to create added- value products

GRECO

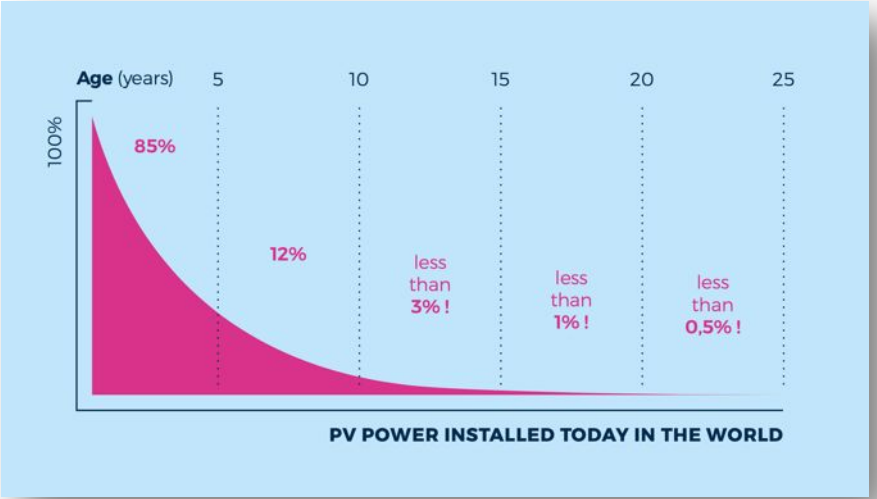
Product



Resources

A full set of PV installations aged among 1 and 30 years

Difficulty



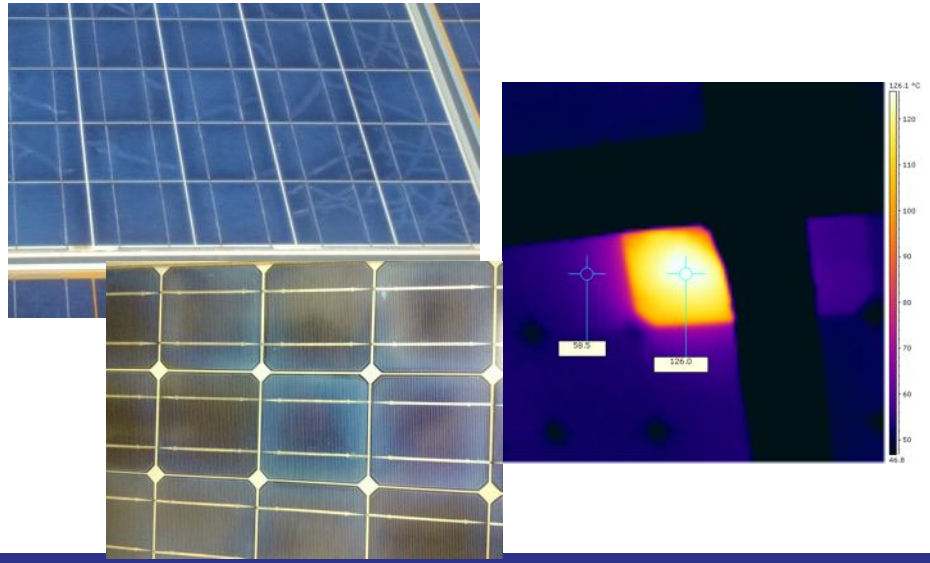
97% of total PV energy capacity installed worldwide is younger than 10 years old !!!

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

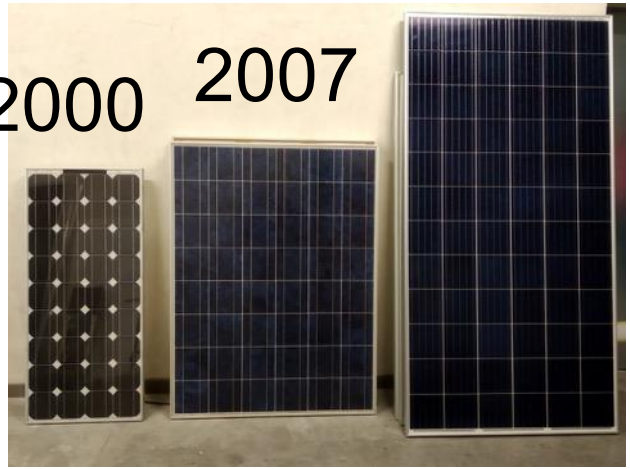
Case 2: Citizen Science Inputs to create added- value products

State of the art

PV modules are made by a set of solar cells that are interconnected. A failure in a cell can limit the full energy production of the module



Change the module is not always feasible: no replacement parts for 10 years-old modules, companies bankruptcy, etc..



This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Case 2: Citizen Science Inputs to create added- value products

GRECO

Product

Resources

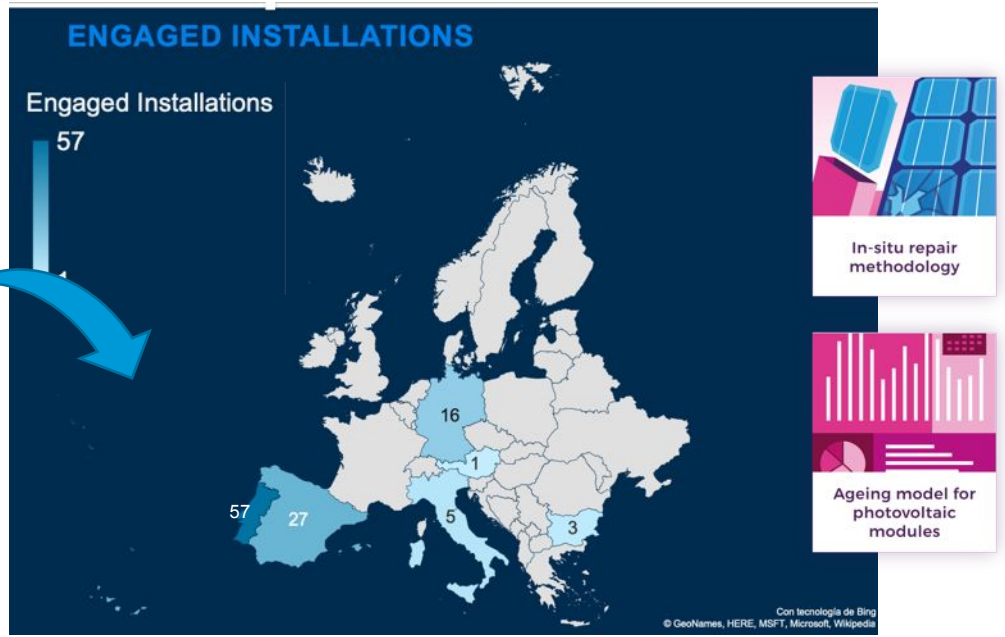
A full set of PV installations aged among 1 and 30 years

- What kind of failures are experiencing PV modules as time goes by in different locations?
- How to link failures to aging or weather conditions?

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Public: Evaluation of PV modules performance Citizens & Researchers collaboration

GRECO

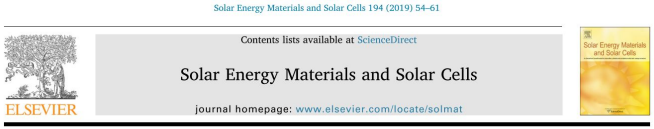


110 Installations (90% older than 10 years)

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Innovation Open Science Products to Generate

Open Model (no Open Data) available for inverstors and banks to predict better RoI when investing in PV



Q1 Journal. GREEN OPEN ACCESS without embargo via arXiv

In-situ repair methodology video-tutorials to help installers around the world

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

GRECO methodology for creating new CS initiatives

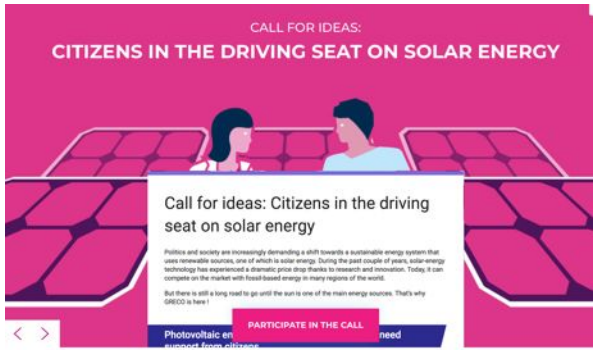
CS4CS

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

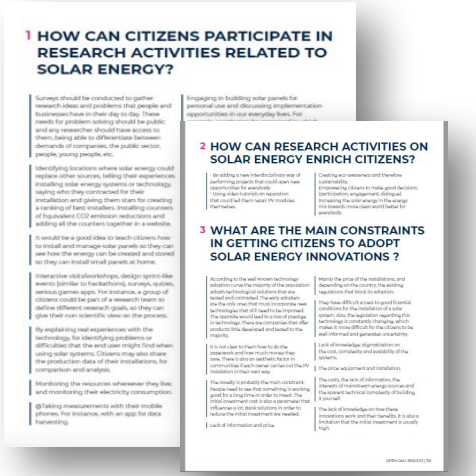
GRECO methodology for creating new CS initiatives

1st Researchers inputs

How can citizens participate in research activities related to solar energy?
How can research activities on solar energy enrich citizens?
What are the main constraints in getting citizens to adopt solar energy innovations ?



60 international teams took part



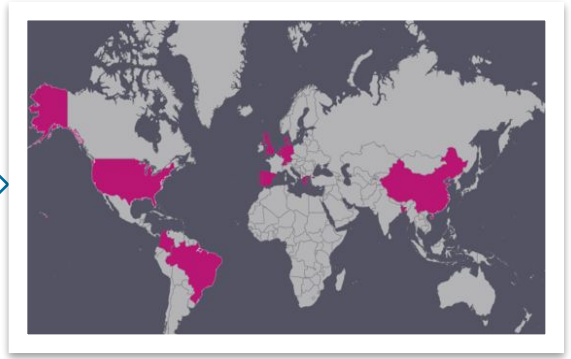
https://doi.org/10.5281/zenodo.3362238

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

GRECO methodology for creating new CS initiatives

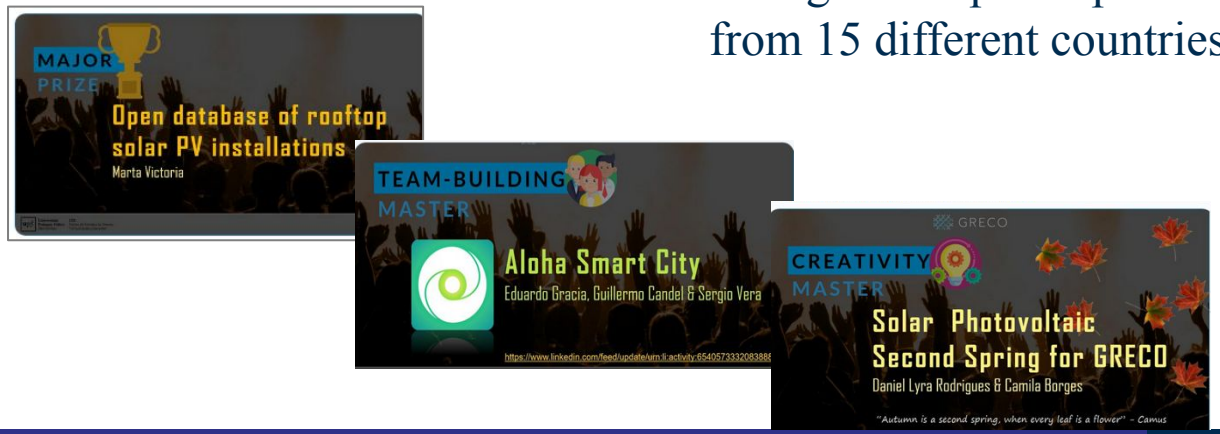
2nd Citizens Co-design

Considering the needs requested by reserachers, how do you image that we can engage citizens to get such data?



61 registered participants from 15 different countries

Chamilo
E-Learning & Collaboration Software



This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

https://www.youtube.com/watch?v=zJOuDLkHXHw

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Thanks for your attention

www.greco-project.eu

anabelen.cristobal@upm.es

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289

Citizen Science feat. Professional Science

Our vision (SciStarter source) :

Citizen Science Projects in Environmental Science, Meteorology, Biology, Health, Marine Science, Conservation, Astronomy, etc…

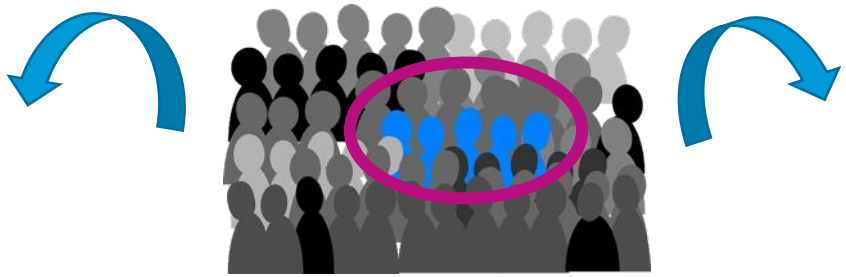
Citizen Science Projects are not always linked to Professional Researchers

Our Experience (GRECO source) :

Professional Researchers aggrees on the RRI spirit but OS in general and Engagement in particular is quite time-consuming.

GRECO approach:

Demonstrate that some Enginnering Innovative Products are only feasible via Citizen Science



Ideate a co-design procedure to launch Citizen Science Initiatives

This project has received funds from the European Union's Horizon2020 research and innovation programme under Grant Agreement 787289